

FIG 1

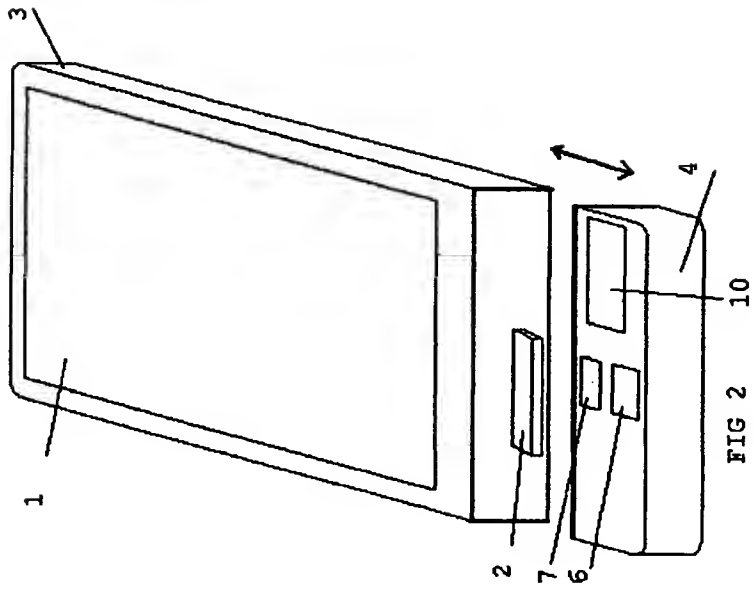
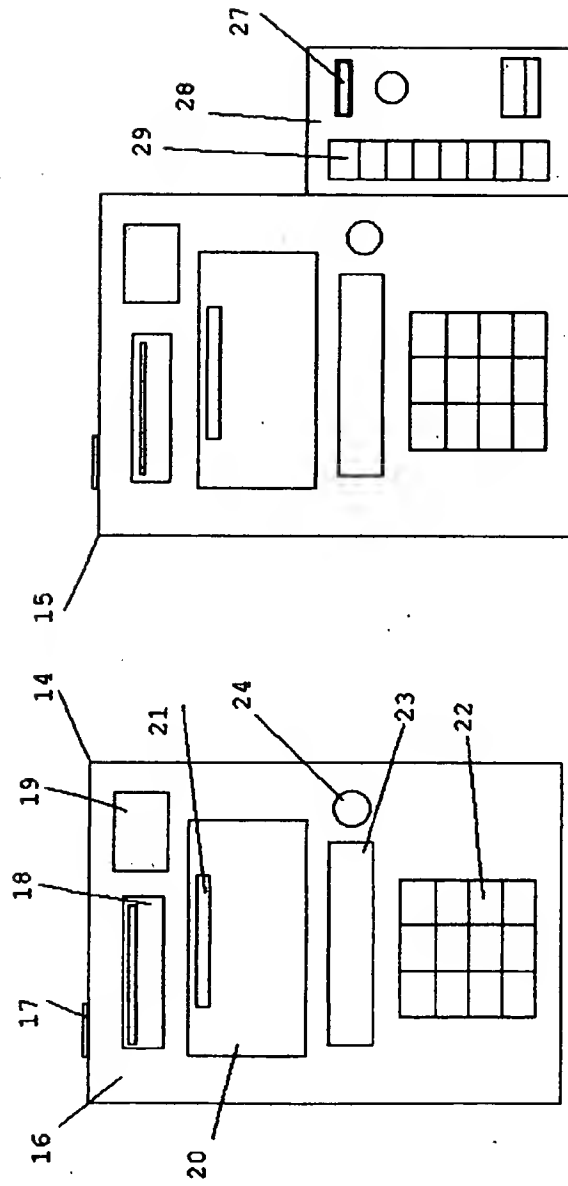


FIG 2

FIG 3



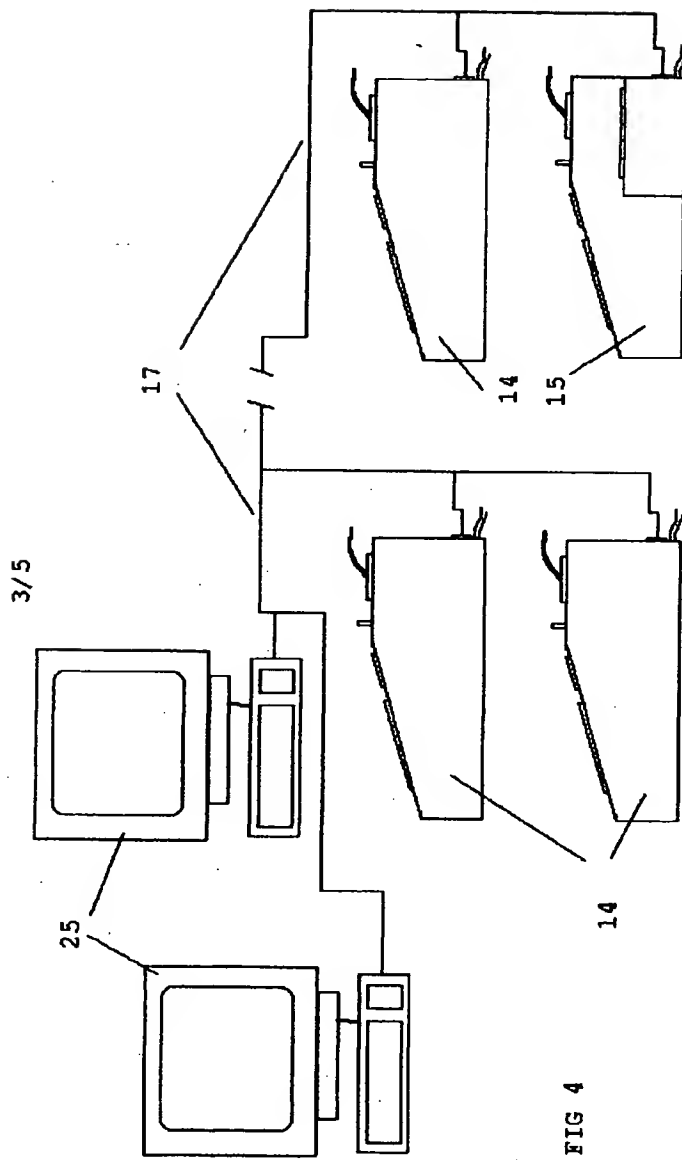


FIG 4

FIG 5

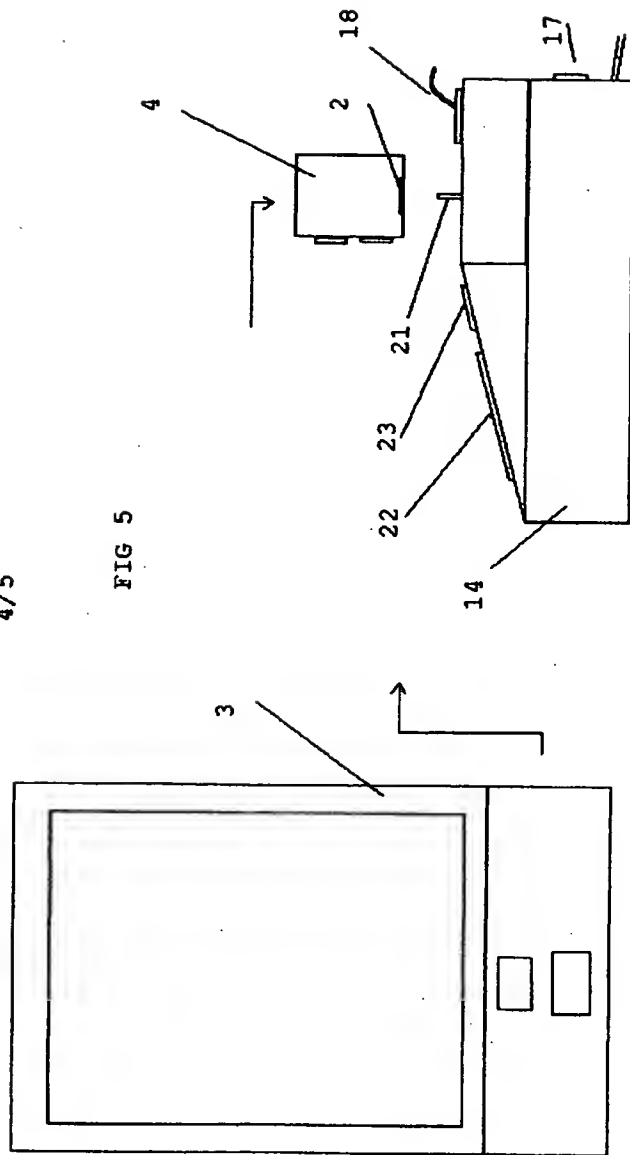
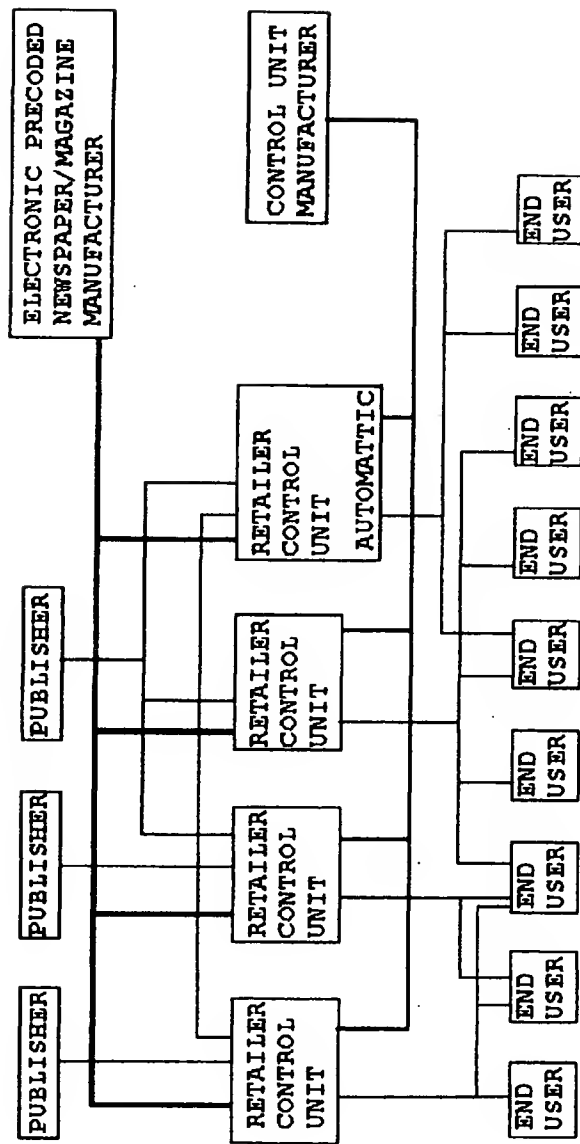


FIG 6



### **Electronic newspapers and magazines**

This invention is related to electronic publishing, retailing and end user control of electronic newspapers and magazines.

At the present publishers of newspapers have to collect all the information and everything daily in a very short time and distribute huge amounts of papers to the retailers, for magazines this is not so much of a problem as this is done on a weekly or monthly basis.

The enormous amount of paper and inks used, in both cases, the transportation and all the pollution it brings with it can be minimized.

It also saves a lot of time and money because there is no print cycle and reduces the extra congestion from transportation traffic.

According to the present invention it will be possible for both magazine and news paper publishers to collect their information as normally, how ever from then on it is encrypted, coded and send to their retail outlets (newsagents) by a convenient means such as telephone lines, satellite or other means.

At the retail site the information is stored in a secured electronic mass storage control system which can be manually operated by the store staff, or automated and coin operated by the end users.

Up to now an electronic newspaper has not been possible due to the enormously high cost of LCD panels, power requirements and rigidity of such panels.

How ever, it is now possible by using a black and white or colour flexible light weight high resolution near print quality electronic ink display (E-Ink Corp™) .

A brief case size would be useful but it could be larger and it is possible to have two hinging display pages, which are electrically connected by flexi-cable.

A detailed description now follows with the help of diagrams and a flow chart, which are not to scale and diagrammatic, for a single page electronic daily newspaper/magazine and publisher/retail/end user control system (magazines are processed the same way only monthly):

Fig 1 describes in plan the main parts the electronic news paper/magazine

Fig 2 describes the operating principle of the electronic newspaper/magazine

Fig 3 describes in plan the main parts of the two retail secured control system(s)

Fig 4 describes the publisher's distribution cycle and security

Fig 5 describes the retail outlet principle and security

Fig 6 shows the overall publisher/retail/end user flow chart

The electronic news paper in Fig 1 , consists out of the following main parts:  
A correct size easy to read light weight, flexible high resolution black and white or colour near print quality electronic ink display 1 ,such as an E-Ink Corp™ type manufactured by Philips™, taking very little current to operate and no current at all when not changing pixels, which is most of the time whilst reading, requiring no back light , even in dull light and at an angle.

As the display 1 is flexible it is very unlikely to get damaged.

A display interface, not shown, may be(preferably) an integral part of the display 1.  
A suitable lightweight holder 3 to support the flexible display 1 and possibly the display interface if this is not part of the detachable part 4.

A detachable part 4 of holder 3 houses all the necessary control electronics 5 comprising of the following main parts , a circuit board with, a re- programmable microprocessor containing firmware/software , associated components, a very large non volatile flash prom memory (preferably a serial type),a re-chargeable battery and charging circuit , operator control switches 6 and 7 and a suitable multi functional connector 2 for connecting control part 4 to the display 1 , the retail security control system 14 or 15 connector 21 or a battery charger when necessary.

In Fig 2 the retailer purchases from a manufacturer or pre-arranged outlet, the electronic news papers 3 with the re-programmable micro-processor cleared from any program (firmware) after testing , there for making it useless if stolen.

The end user purchases the inactive electronic news paper 3 from the retailer.

The detachable part 4 is plugged into the retail control unit 14, connector 21, and the retailer, using keyboard 22, programs and secures the re-programmable microprocessor with the relevant firmware program thereby activating part 4 of the newspaper, the internal micro processor firmware programme is now not readable , this can be preformed only ones at the initial sale of the electronic paper, if carried out wrongly it has to be returned to the manufacturer for rework

Next the purchaser gives the retailer an end user code , making the unit unique to the user ,the code is entered on key pad 22 of the retail unit 14.  
For security reasons the initial process cannot be preformed on an automated unit 15 .  
The end users selected code can be entered only once, this stops the use of stolen items.



The end user then tells the retailer which news paper/magazine (s) he wants loaded into his electronic news paper 3 from the retail control system 14.

The end user selected code has to be entered into any retail control system 14 from then onward, the user code is then verified, not necessarily equal to, against the user's electronic newspaper 3 at any retail outlet before any text or pictures can be loaded into the non-volatile flash prom memory of detachable part 4.

The loaded information is then checked, summed and verified by the relevant retail control unit 14 and if the transaction is correct the operator is advised on the display 23 and audibly by buzzer 24.

After the loading has completed the detachable part 4 is plugged into the end user's display multi-function connector 2 and the selected paper can be read on the display 1.

Two user control switches 6 and 7 allow for next and previous page control if pressed for a short time, if either switch is held down for a longer period of time the page selections will be faster which is useful if a large number of pages have to be turned.

A general reset is activated if both keys 6 and 7 are pressed together in which case the first page will show.

As the display 1 is of a static type the current can be switched off once all the pixels have changed, the non-volatile flash prom memory once it has loaded a particular page on to the display 1 can be switched off as well, the re-programmable microprocessor will go into a sleep mode, as part of the firmware program, very shortly after a page load thus saving further battery power.

The last page shown will remain on the display even without power.

Normal power mode is resumed if one or both of the switches 6 or 7 are pressed to update the page.

All the information will be held in the electronic paper's non-volatile memory in unit 4 until the next information loading session at the retail stage, the previous information will then be destroyed.

A small solar cell 10 charges the small battery continuously in bright conditions, however, an extra charge may be required from time to time and this is achieved by plugging a small external charger into multi function connector 2 of the detachable part 4.

Fig 3 describes in plan the main parts of a manually operated retail system 14 and an automated stand alone retail system 15, function basically the same.

The system consists out of a strong secure casing 16, mains PSU 19, electronic circuit board 20 with a battery backed re-programmable microprocessor and associated components which controls either hard drives and/or some other very large memory system, an operator key pad 22 and a buzzer 24, a small display 23, means of communication such as modems using land lines 17 or by other means, a small printer 18 and a connector(s) 21 to plug the removable part 4 of the electronic paper 3 in to.

During the retail control systems 14 installation the relevant software/firmware is installed and secured in order to be able to program any blank supplied electronic papers/magazines.

For a stand alone retail system 15 a coin or token 27 recognition and handling part 28 has to be added as well as vandal proof selector buttons 29.

The retail control systems 14 or 15 are all given an unique retail communication security code on line by the publishers after installation .

The publishers 25 to retail cycle operates as follows, Fig 4, after al the incoming news and information has been processed ,the publisher contacts retailers control unit 26 unique code to establish and verify a communication line 17 .

At the publishers end 25 an unknown daily rolling code is generated , this code is used to scramble the requested information by the retailer before it is send to the retail control unit 26 where it is stored, including the daily rolling code, in mass storage devices such as hard drives or solid state memory.

This operation applies to all publisher to retail transactions , even the same publisher will generate different rolling codes for different transactions (one publisher may by in charge of several newspapers or magazines), the whole operation is automatic but can also be manually performed .

Running accounts are generated at the same time to charge the retailer.

Once the send scrambled information and daily rolling code have been check summed and verified by the publishing end it is stored separately in the control unit(s) 26 if not it will be indicated on display 23 what the current status is and buzzer 24 will sound to attract the operator attention if necessary and a retry will be performed, if correct ,communication 17 is dropped and the retailer is in charge of any further transactions. All the information has to be send only ones per day, in most cases, providing the transmission was successful.

If an end users detachable unit 4 is to be loaded, the required information stored in retail unit 14 or 15 is unscrambled by the rolling daily retail code and re-scrambled with the unique end user chosen code to make it readable.

The retailer is now in control, Fig 5, and every time an end user electronic news paper 4 is loaded by the retail control system 14,15 a running account is kept by the retail control system which automatically or on demand sends the account details of that particularly retailer to the publisher 25, the end user pays the retailer of course.

A print out 18 can be produced from any of he retail systems 14 as well as from the publishers retail accounts, specially for stand alone systems 15, at any time for fraud detection and accounting purposes.

The retailer handles the transaction as described in Fig 2, and the system allows any end user any number of transactions at any retail outlet, manually or automatically operated.

If the automated system 15 is used the end user simply selects 29 what is required and pays, plugs in the detachable part 4, enters his chosen user unique code on the key pad 22 Fig 3, and loads the new information if verification and check summing is correct.

All retail control units 14 and 15 also power the removable part 4 of the electronic news paper 3 when they are plugged in 21 for updating, this is to ensure a correct transaction takes place in case the battery is flat at that moment in time.

The whole system described herein is controlled by its own software/firmware and the retail units 14 are capable of programming any newly purchased electronic newspaper/magazine and secure the microprocessor firmware therein so that it cannot be read for security reasons.

The retail units 14 would preferably have a daily supervisors code to access the microprocessor programming cycle in the unit 4 so that numbers of new electronic news papers/magazines sold match the accounts , this is to stop and limit fraud at the retail stage.

### Claims

- 1 An electronic newspaper/magazine and overall publisher distribution and retail to end user control system with all the necessary software, whereby each publisher sends by landline, satellite or any other means, relevant information and pictures electronically in a differently scrambled form to each retail control unit using a daily generated unknown rolling code, for storing all the said information and pictures in a scrambled form including the rolling code on local manual or automatic coin operated retail control unit mass storage hard drives or other large capacity media storage equipment, providing all the said security and verifications have been met, allowing a retailer to pass on the said information by means of operator controls on the said retail control units, which unscramble the information using the stored daily rolling code and re-scramble the information using the end user chosen code, to end users, where by the end user initially purchases from the retailer a manufactured two part un-programmed electronic newspaper/magazine which after programming on the said control unit, firmware secured and appropriate end user chosen coded, can from then on be used to load and show news paper/magazine information.
  
- 2 A two part electronic news paper/magazine as claimed in 1, part one consisting out of a holder containing a connector and an easy to read light weight flexible high definition near print quality electronic ink display which may or may not include the display interface in which case it is part of the second part mentioned herein, and as the said display is a static type the power can be switched off after each page has been changed without loosing any visual information in order to save battery power.  
  
And a second part of the physically and electrically plug together holder containing all the relevant electronics including a re-programmable microprocessor with sleep and wake up facilities, to save battery power, and a firmware program capable of handling all said end user and retail control unit electronic connections, coding, check summing, verifying and operator control switches and has, apart from any internal processor flash prom, a very large non-volatile flash prom memory (preferably serial type) large enough to store all the said end user selected information and pictures.  
The said firmware program being loaded and secured into the programmable micro-processor by the retailer by plugging the said second part into a manually operated retail control unit and using the operator keys.
  
- 3 An over all control system and soft ware, as claimed in 1 and 2, allowing any publisher to send information, including any security daily rolling codes and verifying measures, to any retail outlet control system via modem, land lines, satellite or any other means, providing they are part of the said system, and which allows any end user to purchase any electronic newspaper or magazine information, providing the end user selected verifications are correct, from any retailer if they are part of the said system.
  
- 4 Retail battery backed control units, as claimed in 1 and 3, handling and logging all the publisher, retailer and end user transactions, which can be displayed and printed out if and when necessary, as well as be remotely accessed by the publisher automatically or manually, for the control of accounts and fraud detection, and is locally

operated by key pad entered information by the retailer to start and complete retail transactions which is confirmed with the aid of the display and a buzzer .

5 An additional retail stand alone control system, as claimed in 1,3 and 4, operated by the end users themselves , principally working the same as the manual version apart from having a coin or token collection payment system incorporated..

6 A rechargeable battery which runs the whole electronic newspaper/magazine as claimed in 1 and 2, is continuously charged by a solar cell , providing the light is bright enough, or can be charged via the said multi-use connector with a suitable external charger.

7 An electronic newspaper/magazine ,as claimed in 1 and 2, with two user control switches , one for forward and one for reverse paging if pressed quickly and if either switch is held down longer will search fast forward or reverse.  
Either switch also serves to wake up the programmable microprocessor , if in sleep mode, when the next page has to be loaded before it is displayed.  
Also if both the said switches are pressed together it serves as an overall reset after which page one will be displayed.

8 An electronic newspaper/magazine , as claimed in 1,2 and 7 using a flexible lightweight high definition near print quality electronic ink display requiring no back light, even in adverse conditions, and uses no current at all ones all the pixels have changed their state after an update and can therefore be switched off during the reading period ,saving battery power.

9 A controlled electronic publishing, retail and end user electronic newspaper/magazine system, as claimed in 1 to 8 ,using appropriate software , whereby the electronic information from the publisher is transmitted to each said retail outlet control system in an scrambled form under the control of an unknown daily changing rolling code ,a different code for each item, even from the same publisher, the daily rolling code being generated at the publishers end, this in turn allows the retailer to sell to the end user the newspaper/magazine selected information using the said manual or automated retail control unit(s) which are capable of unscrambling any of the selected end user information using the daily rolling code and re-code the said information in order to load the end users electronic newspaper/magazine using the end users chosen code, as described substantially herein with the help of diagrams and chart Fig 1 to 6



INVESTOR IN PEOPLE

Application No: GB0414251.9

Examiner: Miss Ruth Atkinson

Claims searched: 1 and 3-5

Date of search: 5 October 2004

## Patents Act 1977: Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
Y	1 and 3	GB 2381087 A (SPACEY) See figure 2 and "Brief summary of the invention"
Y	1 and 3	EP 0924630 A1 (MORE MAGIC SOFTWARE) See figure 1 and corresponding description
Y	1 and 3	EP 0665486 A3 (AT & T) See figure 2 and "Summary of the invention"
Y	1 and 3	WO 02/082244 A1 (THE MOBILE MEDIA COMPANY) See figure 1 and corresponding description

### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>W</sup> :

G4A

Worldwide search of patent documents classified in the following areas of the IPC<sup>07</sup>

G06F

The following online and other databases have been used in the preparation of this search report

Online: WPI, EPODOC, PAJ



Application No: GB0414251.9

Examiner: Miss Ruth Atkinson

Claims searched: 2 and 6-9

Date of search: 26 October 2004

## Patents Act 1977

### Further Search Report under Section 17

#### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
Y	2 and 7	GB 2380824 A (STEPHEN JOHN SMITH) See figures
Y	2 and 8	EP 1276090 A1 (MATSUSHITA) See "Disclosure of the invention" and figures
Y	2	GB 2365601 A (INVENTEC ELECTRONICS) See particularly description of figure 1
Y	2	DE19741453 A1 (PACKING GMBH AGENTUR FUER DESI) See figure 5

#### Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

#### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>W</sup> :

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Worldwide search of patent documents classified in the following areas of the IPC<sup>07</sup>

G06F

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